



## NEWS CLIPS

March 30-31 & April 1-5, 2019

### Highlights of the Week@IITD

## यमुना एक्सप्रेस-वे पर हादसे रोकने को दिल्ली IIT ने सुझाए ये 7 उपाय

April 4, 2019 <https://www.livehindustan.com/ncr/story-delhi-iit-suggest-these-7-improvements-to-stop-accidents-on-yamuna-expressway-2474941.html>



यमुना एक्सप्रेस वे का सुरक्षा ऑडिट दिल्ली आईआईटी ने पूरा कर लिया है। इसका ड्राफ्ट यमुना प्राधिकरण को सौंप दिया है। गुरुवार को आईआईटी की टीम इसका प्रजेंटेशन देगी। रिपोर्ट में हादसे रोकने के लिए सात प्रमुख सुझाव दिए गए हैं। इसमें रंबल स्ट्रिप, लेन व्यवस्था खत्म करने, गति पर नियंत्रण के लिए चालान सिस्टम को और दुरुस्त करने, साइन बोर्ड की संख्या बढ़ाने, फ्लस मीडियन आदि शामिल हैं। यमुना प्राधिकरण इसको लेकर एक्सप्रेस वे प्रबंधन के साथ बैठक कर चुका है।

यमुना एक्सप्रेस-वे पर हादसों को रोकने के लिए यमुना प्राधिकरण ने दिल्ली आईआईटी से सुरक्षा ऑडिट कराया है। आईआईटी ने सुरक्षा ऑडिट पूरा कर लिया है। इसका ड्राफ्ट प्राधिकरण को सौंप दिया गया है। आईआईटी दिल्ली की टीम गुरुवार को प्राधिकरण में अपना प्रजेंटेशन देगी। वह बताएगी कि इन सुझावों से क्या प्रभाव पड़ेगा। ड्राफ्ट मिलने के बाद यमुना प्राधिकरण ने एक्सप्रेस वे प्रबंधन के साथ बैठक की। बैठक में तय हुआ कि आईआईटी के प्रजेंटेशन के बाद इस पर अमल किया जाएगा। इन कामों को छह महीने में पूरा किया जाएगा। प्रजेंटेशन के बाद एक्सप्रेस वे प्रबंधन

इन कार्मों में आने वाले खर्च का आकलन करेगा। यह पैसा यात्रियों से वसूलने की तैयारी है। सुरक्षा सेस के नाम से टोल की दरें बढ़ाई जाएंगी। जब इस पैसे की वसूली हो जाएगी तो इसे खत्म कर दिया जाएगा।

"दिल्ली आईआईटी ने सुरक्षा ऑडिट पूरा कर लिया है। इसमें सात प्रमुख सुझाव दिए हैं। गुरुवार को आईआईटी की टीम अपना प्रजेंटेशन देगी। इसके बाद इस पर काम शुरू होगा।" -डॉ. अरुणवीर सिंह, सीईओ यमुना प्राधिकरण

### **सुरक्षित सफर के लिए ये उपाय जरूरी**

1. एक्सप्रेस वे के प्रवेश व निकास द्वार और जन सुविधाओं के पास रंबल स्ट्रिप लगाई जाएं ताकि वहां पर वाहनों की गति कम हो सके। इन जगहों पर हादसों की आशंका रहती है। अभी यहां पर वाहनों की गति कम करने का कोई प्रावधान नहीं है।
2. निकास द्वार पर क्रश एटीन्यूटर्स लगाए जाएं। एक्सप्रेस वे से निकलते समय वाहन तेज गति में होते हैं। ऐसे में अगर वाहन अनियंत्रित होता है तो क्रश एटीन्यूटर्स गाड़ी को क्षतिग्रस्त होने से बचाएंगे। इसमें नुकसान होने की आशंका काफी कम हो जाती है।
3. एक्सप्रेस वे पर साइन बोर्ड की संख्या बढ़ाई जाए। इसमें स्टाप, टोल प्लाजा, जन सुविधाएं और दूरी आदि का जिक्र हो ताकि चालकों को दिक्कत न उठानी पड़े। अभी साइन बोर्ड कम होने से चालकों को सही जानकारी मिलने में दिक्कत होती है।
4. एक्सप्रेस वे के किनारे बैरियर को और ऊंचा उठाया जाए ताकि बाहर से जानवर आदि ना आ सकें। अभी किनारे के बैरियर छोटे हैं। इसमें कोई भी आ सकता है। अगर अचानक कोई हाईवे पर आता है तो उससे हादसे की आशंका बढ़ जाती है।
5. एक्सप्रेस वे पर बनाई गई लेन को खत्म किया जाए। अभी बाइक, कार, ओवरटेकिंग की लेन तय हैं। आईआईटी दिल्ली की टीम लेन खत्म करने के कारणों को अपने प्रजेंटेशन में बताएगी।
6. वाहनों की गति पर नियंत्रण के लिए चालान सिस्टम को और दुरुस्त किया जाए। अभी चालान सिस्टम है, लेकिन वह बहुत प्रभावी नहीं है। चालान होने से वाहनों की गति पर लगाम लग सकती है।
7. डिवाइडर की जगह फलस मीडियन (यह प्लेन होता है, लेकिन वाहन नहीं चलते हैं) बनाने का सुझाव दिया है। इसमें वाहन चलने की अनुमति नहीं होती है। लेकिन लोग यहां पर रुक सकते हैं।

## Replace dividers with flush medians on Yamuna Expressway to reduce accidents: IIT-Delhi report

April 4, 2019 <https://www.hindustantimes.com/noida/replace-dividers-with-flush-medians-on-yamuna-expressway-to-reduce-accidents-iit-delhi-report/story-rLRJAFvI9W>

The draft safety audit report which was submitted Wednesday suggested eight ways, including installation of more traffic signages. IIT-Delhi submitted the report to the Yamuna Expressway Industrial Development Authority (Yeida) which controls the expressway.



Dividers were one of the causes of accidents on the Yamuna Expressway, according to a report of IIT-Delhi.

The Indian Institute of Technology-Delhi on Wednesday said one of the ways to reduce accidents on the Yamuna Expressway would be replace dividers with flush medians.

Accidents have been frequent on the 165km access controlled highway that connects Greater Noida with Agra. In latest one last Monday, eight people on a sleeper bus were killed after it rammed a truck on the highway. Flush medians are white diagonal lines, painted down the centre marking an area about the width of a car. They are called 'flush' because they are not raised, just painted to demarcate the median.

The draft safety audit report which was submitted Wednesday suggested eight ways, including installation of more traffic signages. IIT-Delhi submitted the report to the Yamuna Expressway Industrial Development Authority (Yeida) which controls the expressway.

In the draft report, IIT-Delhi has suggested that the highway operator, Jaypee Infratech Limited, which built the expressway, should focus on these eight points, besides taking other steps. We are studying this report and will discuss it with IIT-Delhi experts on Thursday, paving the way for its implementation in the next six months," Arun Veer Singh, chief executive officer, Yeida, said.

"Key suggestions are removal of the divider and installation of more traffic signages. But we will finalise suggestions after discussions with the IIT-Delhi team," Singh said.

Dr S Velmurugan, senior principal scientist, Central Road Research Institute (CRRI), said, "Introduction of flush median will certainly help in reducing accidents on the Yamuna Expressway as it provides comfort to motorists during driving."

The requirement for flush medians was first felt on the Mumbai-pune Expressway in view of the frequent accidents on that stretch and it was successfully tried there. "However, the government decided to install crash barriers to ensure vehicles do not cross over to the other side. The flush median helps stopping glare from vehicles plying in opposite direction. Flush median can help provide a safer ride on the Expressway, but authorities always have a choice of installing crash barriers," Anil Chhikara, transport expert with the Delhi transport department, said.

Yeida, in August 2018, had hired lit-delhi for conducting the safety audit of the expressway that passes through six UP districts – Gautam Buddh Nagar, Aligarh, Mathura, Hathras, Agra and Bulandshahr.

Following criticism from the Supreme Court, which is hearing a petition seeking motorists' safety on the expressway, the UP government had directed officials to step up enforcement to contain speeding and other traffic violations. But the court was not satisfied with the safety measures taken so far, officials said.

On March 6, the Allahabad High Court had directed UP government and other respondents to file their replies by April 9 on a PIL alleging non-compliance of road safety measures on the Expressway.

In the last six years, as many as 705 people were killed in accidents on Yamuna Expressway, claimed the petitioner filed by one Bharti Kashyap.

The petitioner had alleged that due to non-compliance of road safety measures on the Yamuna Expressway, a large number of accidents were taking place.

"Our objective is to take the required steps to ensure safety of motorists. We will ensure that the suggestions, after discussions, are implemented at the earliest," Yeida CEO said.

### **BIS-IIT Delhi collaboration: standardisation, testing and conformity assessment in focus, know details**

**April 4, 2019** <https://www.jagranjosh.com/news/bis-iit-delhi-collaboration-standardisation-testing-and-conformity-assessment-in-focus-148454>

**BIS-IIT Delhi collaboration:** BIS and IIT Delhi have agreed to collaborate in the field of standardisation, testing and conformity assessment. The Bureau of Indian Standards and Indian Institute of Technology Delhi have joined hands for this process of standardisation, testing and conformity assessment. Apart from this, IIT Delhi and BIS have agreed upon setting up a Centre of Excellence in the same field.

The Bureau of Indian Standards (BIS) has signed a Memorandum of Understanding (MoU) with the Indian Institute of Technology Delhi. The MoU was signed by IIT Delhi Director Professor V Ramgopal Rao and Director General of BIS Surina Rajan. As per the MoU, IIT Delhi is supposed to provide infrastructure for research and development and BIS is supposed to provide financial support for the

projects of standardisation. More than 50 members of IIT Delhi faculty are in the technical committees of BIS which is a good sign for the collaboration.

As per the Director of IIT Delhi, it is necessary that the youngsters are involved in standardisation and hinted towards inculcating standardisation in the curriculum. He was of the opinion that technology, innovation and standardisation shall be interlinked so that technology based products and services can be developed. The need to make the financial data more secure was emphasised by the speakers. The MoU between IIT Delhi and BIS will be valid for five years which can be extended further on mutual consensus.

IIT Delhi and BIS will jointly organise training and short-term education programmes on standardisation and conformity assessment. IIT Delhi faculty may be hired as consultants also. The lab facilities at IIT Delhi may be used if there are requirements for various conformity assessment of the BIS.

### **BIS inks an MoU with IIT, Delhi**

**April 3, 2019** [https://www.business-standard.com/article/pti-stories/bis-inks-an-mou-with-iit-delhi-119040301250\\_1.html](https://www.business-standard.com/article/pti-stories/bis-inks-an-mou-with-iit-delhi-119040301250_1.html)

The Bureau of Indian Standards (BIS) has inked a Memorandum of Understanding (MoU) with the Indian Institute of Technology in Delhi to collaborate in the field of standardisation and conformity assessment.

The MoU was signed by IIT Delhi Director Professor V Ramgopal Rao and Director General of BIS Surina Rajan.

BIS and IIT Delhi have also agreed to set up a Centre of Excellence in the field of standardization, testing and conformity assessment.

According to the MoU, IIT Delhi will provide infrastructure support for research and development projects of relevance to standardisation and BIS will provide financial support to IIT Delhi for projects.

Rao highlighted that around 50 faculty members of the institute are part of the technical committees of BIS and hoped that the memorandum would strengthen the collaboration further.

Rao underscored the importance of involving youngsters in standardization and discussed various possibilities of incorporating standardisation in the academic curriculum of IIT, Delhi.

He also emphasized that technology innovation and standards development shall be interwoven seamlessly to foster development of technology oriented products and services.

Rajan highlighted the upcoming areas like '5G application layer standardization' where BIS has taken the lead in ISO/IEC.

He underlined the importance of standards in ensuring data security, especially in the financial field and emphasised the need of active involvement of technological institutes like IITs in elevating India's position from 'Standard takers' to 'Standard makers'.

She further stated that creating synergy among premier educational institutions with involvement of young minds in the area of standardisation process would benefit the country.

Initially, the MoU will remain in force for a period of five years and can be extended further.

As per the MoU, both the institutions will jointly organise training and short-term education programmes on standardisation and conformity assessment, besides exploring the possibility of the hiring of IIT Delhi faculty as consultants on secondment basis.

The MoU will also explore the possibility of using laboratory facilities available at IIT Delhi for catering to the requirements of various conformity assessment schemes of the BIS.

## **IIT DELHI TO HOST ANNUAL BUSINESS SUMMIT ‘BUILDING INDIA INC’ ON APRIL 13TH & 14TH**

**April 3, 2019** <https://www.duexpress.in/iit-delhi-to-host-annual-business-summit-building-india-inc-on-april-13th-14th/>

**BUILDING INDIA INC. 2019**  
India in 2020: The Decade & Beyond  
April 13, 14  
Seminar Hall  
IIT Delhi

DEPARTMENT OF MANAGEMENT STUDIES, IIT DELHI & IIT DELHI ALUMNI ASSOCIATION Presents

**R. BALKI**  
INDIAN FILMMAKER

**MANU JAIN**  
MD, XIAOMI INDIA

**ASHWIN SANGHI**  
WRITER

**SANKALP:**  
THE CSR CONCLAVE

**SAMAAJIKA:**  
THE MEDIA CONCLAVE

**SAMVAAD:**  
THE ECONOMICS CONCLAVE

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FOR MORE DETAILS & REGISTRATION VISIT [WWW.BII-DMSIITD.IN](http://WWW.BII-DMSIITD.IN) Mahesh +919600318666

IIT Delhi is bracing for its Annual Business Summit “Building India Inc” which will hit the national capital on April 13th and 14th at a scale and grandeur unprecedented. Department of Management Studies and IIT Delhi Alumni association are on the Vanguard of driving the preparations in the backstage of Building India ’19. “India in 2020: The Decade and Beyond” is the theme for this year’s Summit conceived with the vision of late Dr. A.P.J. Abdul Kalam in mind, BII investigates the significant challenges that need to be tackled and how a paradigm shift can be brought about in the

country to realise President Kalam's 2020 Vision. To discuss the vision of a better India, the convergence of ignited minds from different walks of life will provide a befitting platform for the conceptualization of novel ideas. Eminent Personalities such as Manu Jain, R Balki, Aswin Sanghi, Balaji Vishwanathan and many more of the best from their walks would be sharing their wisdom at the summit. This year's Building India has Indian Oil Corporation as its 'Gold Sponsor' and Power Finance Corporation as its 'Silver Sponsor'.

Day 1 (April 13th, 2019) of Building India '19 will begin with an Inaugural session graced by Ms. Debjani Ghosh (President NASSCOM), Mr V Ramgopal Rao (Director, IIT Delhi), Mr Atul Bal (President of IITD Alumni Association), Prof MP Gupta (Head of Department of Management Studies) and Prof Seema Sharma (Faculty Coordinator, IIC, DMS). After the Inauguration, the Summit commences in style featuring keynote sessions from Mr Manu Jain (MD, Xiaomi) and R Balki (famed Film Director). In the Afternoon, the Forum opens for Mr Balaji Vishwanathan (Quora fame) and Mahesh Peri (Founder & CEO Careers 360). The final event of the day is SANKALP: The CSR Conclave that will host renowned speakers from corporates, NGOs, and government organisations to discuss on the topic "Women Empowerment in the next decade".

Day 2 (April 14th, 2019) will begin with SAMAAJKA: The Media Conclave attended by the best in the industry discussing the topic "Individualization in Data Driven Era" followed by Keynote sessions by Ashwin Sanghi (Renowned Author & Writer). The Summit would end with the final event of the day SAMVAAD: The Economics Conclave featuring some of the top minds from the field of Economics discussing and dissecting the topic "Growing Income Disparity in India".

IIT Delhi has declared the two-day flagship summit Open for public, anyone interested can fill in your request to attend the event by registering in the following link:

Register here – <https://forms.gle/o7T56wHVkmFcjiRw9>

For further information, please check out the following links:

Building India Inc. '19 – Official Website – <http://www.bii-dmsiitd.in/>

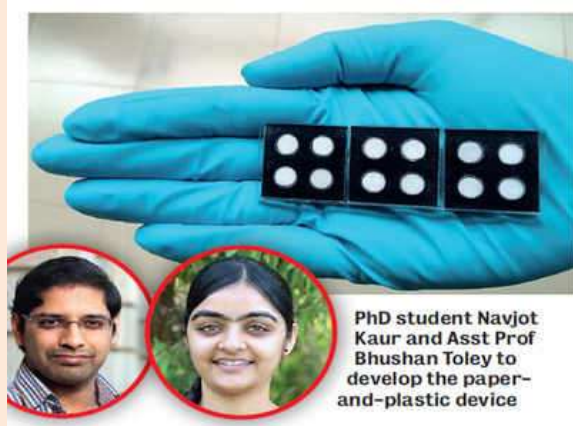
Building India Inc. '19 – Facebook page – <https://www.facebook.com/BII.dmsiitd/>

DMS, IIT Delhi – Official Website – <http://dms.iitd.ac.in/>

**April 5**

## **TB diagnosis can be easier, cheaper**

<https://bangaloremirror.indiatimes.com/bangalore/others/tb-diagnosis-can-be-easier-cheaper/articleshow/68728504.cms>



Researchers of the Chemical Engineering Department at the Indian Institute of Science (IISc) have developed a low-cost, easy-to-access device to conduct DNA-based Tuberculosis (TB) diagnostic tests. The research conducted by Navjot Kaur, a PhD student, and led by Assistant Prof. Bhushan Toley, focuses on increasing access to DNA-based TB diagnostic tests.

“TB is the deadliest infectious disease today and India has the largest number of TB-related deaths among all countries in the world. In 2016, 4.23 lakh people died from TB in India. The standard and most accurate TB diagnostic test (culture test) requires several weeks to perform and it is often difficult to track patients after such a long duration,” Kaur told Bangalore Mirror.

Kaur added that state-of-the-art technology for rapid detection of TB is using ‘molecular diagnostics’, probing for the DNA of Mycobacterium tuberculosis (MTB), the TB-causing bacteria.

“Unfortunately, the World Health Organisation-endorsed DNA-based TB test (GeneXpert) currently costs Rs 1,800 per test and is unaffordable to a majority of India’s poor population. Further, the GeneXpert instrument costs around Rs 18 lakh. As a result, there are only an estimated 3000 GeneXpert machines across India, too few to cover the needs of the large Indian population,” Kaur added.

To overcome the limitation of expensive DNA-based diagnosis, the researchers have invented a low-cost paper-and-plastic device that can detect the presence of TB DNA in liquid samples.

“Using this all reagents (substance used to create a chemical reaction) required to detect TB DNA are preapplied to paper reaction zones within the device. An untrained user can perform a TB DNA detection test by simply adding liquid samples to the paper reaction zones and placing the device in an incubator for 60-80 4/5/2019 Bengaluru: TB diagnosis can be easier, cheaper  
<https://bangaloremirror.indiatimes.com/bangalore/others/tb-diagnosis-can-be-easier-cheaper/articleshowprint/68728504.cms?prtpage=1> 2/2 minutes. The results of the test are read using a cell phone camera installed within a small plastic box. The material cost of fabricating the



device is only Rs. 61 and the cost of reagents per reaction is Rs 41. The device eliminates all expensive instruments traditionally required for DNA detection,” said Toley.

The researchers have already developed an early working prototype of this device and plan to deploy some devices to a nearby hospital to conduct early clinical validation. The hospitals include one in Bengaluru and another in Tamil Nadu.

An untrained user can perform a TB DNA detection test by simply adding liquid samples to the paper reaction zones and placing the device in an incubator for 60-80 minutes –Bhushan Toley, Assistant Professor

Recently Kaur won the second prize at the national Falling Walls Lab contest for this research project.

**April 4**

### **Hearing out the deaf: IISc researchers design a smartphone-based therapy and hearing aid**

<https://researchmatters.in/news/hearing-out-deaf-iisc-researchers-design-smartphone-based-therapy-and-hearing-aid>



Hearing out the deaf: IISc researchers design a smartphone-based therapy and hearing aid

About 6 in every 1000 children screened in the world are born deaf, and for every 200 of them, only one speech therapist is available. The situation is even worse in countries like India, where most people are poor, and health services are not readily available. In a recent study, a group of researchers from the Indian Institute of Science (IISc), Bengaluru, have designed a hearing aid that can offer substantial support, especially in the Indian context. The study, published in the Proceedings of IEEE Global Humanitarian Technology Conference, emerged from a course project at IISc, with intellectual contributions from Dr Ramesh A and Ms. Littina George Manalel, St. John’s Medical College, Bengaluru.

Speech and hearing therapy require considerable time and commitment from the parents of the hearing impaired. Besides, therapists are unavailable at many places across India. The cost of hearing aids, which range from INR 15,000 to INR 2,50,000, and regular visits to a therapist, add to the economic burden of these families. In the current study, the researchers have designed a simple smartphone application to offer therapy, integrated with an affordable hearing aid. The prototype of this hearing aid costs about INR 5000—a third of those available in the market.

“We are working hard on the therapy application now and are hoping to strike partnerships for faster development of the hearing aid. We hope to raise some funding to start clinical testing of this concept within this year”, says Dr Manish Arora, the lead researcher of the study from UTSAAH Lab at the Centre for Product Design and Manufacturing (CPDM), IISc.

The newly developed hearing aid can be connected to a smartphone application, via Bluetooth. The application is multilingual and currently supports English and Kannada languages. The app is designed to switch between two modes—a ‘hearing aid’ mode and a ‘therapy’ mode. In the ‘hearing aid’ mode, the ambient sounds are amplified and processed to enable the child to hear clearly. In the ‘therapy’ mode, pre-programmed audio clips, available in the application, can be accessed and therapy sessions can be conducted by the parents or caretakers of the child.

The application also has a delivery section wherein audio clips are delivered to the child, and an evaluation section through which the performance of the child is assessed, and the child is promoted to the next level.

The first level of therapy involves auditory awareness in which sounds from different ambient sources, such as the kitchen or the classroom, are played to the child through the hearing aid. The child is expected to recognise and relate to these sounds. In the second level, he/she is taught to distinguish between ambient sounds and human speech. The application also has a section with success stories of rehabilitated children to motivate the parents of the child undergoing therapy.

***“The application is not meant to be a replacement for existing therapists but to augment their reach and their effectiveness. By allowing such experts to be in the loop, we can allow for any course correction that must be undertaken during the entire rehabilitation process”, explains Dr Arora, talking about the motivation behind their work.***

As a next step, the researchers are trying to develop the ability to identify different sounds and understand their relevance in the application. Tailoring the application to each child’s needs by including a recording platform so that parents and caretakers can record sounds from the child’s surroundings is another feature they want to add.

***“The system is being designed to support multiple languages, English and Kannada to start with. We would like to crowdsource translation into multiple languages”, says Dr Arora. The researchers have sought support from the Department of Biotechnology for further development of this work.***

### **April 3**

## **IITs will offer 500 seats to candidates from economically weaker sections from this year: Report**

<https://scroll.in/latest/918767/iits-will-offer-500-seats-to-candidates-from-economically-weaker-sections-from-this-year-report>

IITs in Roorkee and Madras will implement a quota of 4%, IIT-Delhi 5.6%, and IIT-Kharagpur may implement around 3% EWS quota.

The Indian Institutes of Technology will offer 500 seats to candidates from the economically weaker sections from the 2019-'20 academic year. The move follows the Centre's introduction of 10% reservations for the poor among upper castes in January.

The total number of seats will be increased to bring in students from economically poor sections. "With the introduction of EWS category in 2019, IITs are going to offer around 500 seats to EWS candidates, which is approximately 4% [EWS quota]," IIT-Roorkee Director AK Chaturvedi told the Hindustan Times. "The increase in the total number of seats will be less than 9%. Thus, the total number of seats will cross 12,500."

IIT-Roorkee, which will conduct the Joint Entrance Examination (Advanced) this year, has said that the top 2.45 lakh candidates from the JEE (Main) would be eligible for the JEE (Advanced) this year. This includes 9,310 candidates from the General-economically weaker sections category and 490 for the General-economically weaker sections-disabled category.

Siddharth Pandey, chairperson of the JEE (Advanced) 2019 for IIT-Delhi, said: "This year, IIT-Delhi will be implementing 5.6% EWS quota. We will have an overall increase of 105 seats. For this, we are already constructing a girls' and a boys' hostel." JEE is the examination through which candidates enter the Indian Institutes of Technology.

IIT-Madras will introduce 4% quota for the economically weaker sections this academic year. "This will throw infrastructural challenges, but it is doable," Director Bhaskar Ramamurthy said. "Classrooms will not be much of a problem but accommodations have to be worked out."

Officials at IIT-Kharagpur, who did not want to be identified, said the college may reserve 3% seats for candidates from the economically weaker sections. However, they added that infrastructure problems will arise when a fresh batch of students would have to be accommodated in the second year of the implementation of the scheme.

### **Female students to get 17 percent additional seats in IIT's**

<https://uttarakhandnewsnetwork.com/2019/04/female-students-to-get-17-percent-additional-seats-in-iits/>

In a welcome news for the girl students aspiring to take admission in Indian Institute of Technology, the prestigious engineering institute in the country this time will be giving admission in 17 percent additional seats in IITs. While 14 percent additional seats were allocated last year. Experts believe that it has increased the prospects of getting desired trades in top IITs even for girls with lower rank in the JEE exam.

To reduce the gender gap in IIT, the supernumerary quota has been fixed in each branch in the year 2018. Under this, girls were admitted separately in 14 per cent seats. Its number was about 900. By combining these seats, about 1840 students enrolled in the 23 IIT's in India last year. This year, female students will get admission in 17 per cent supernumerary seats.

The Human Resource Development Ministry wants this percentage to reach 20 to 21 percent by 2020-21. Before the quota was decided, only 10 percent of the girls were going to IIT. Now there is a target of 2200 to 2500 girls in 23 IITs in the country.

According to Vipin Baluni, managing director of Baluni Classes, Computer Science and Engineering, Electric, Electronic and Communication etc. are the favorite trades among of girls. If they do not get their desired course in IIT then they enroll in NIT or Top Triple IT. Girls are taking less admission in specialization trades, including civil, mechanical.

Under this arrangement, the girls' chances of getting a trade of their choice in a good IIT have also increased for lower rank candidates. Through JEE Advanced, the admission is conducted for about 11 thousand 279 seats in the country's 23 IITs. The exam is going to be on 27th May. The top two lakh 45 thousand students selected by the JEE Main Examination will be declared eligible for JEE Advance. The general category includes 1,13,925, EWSK 9800, OBC's 66,150, SC's 36,750 and ST 18,375 students.

### **IIT Madras startup working on coding lessons in Tamil, Hindi**

<https://timesofindia.indiatimes.com/city/chennai/iit-madras-startup-working-on-coding-lessons-in-tamil-hindi/articleshow/68697715.cms>

An IIT-M startup is working on an updated online platform to help engineering students from rural areas to improve their coding and problem solving skills.

It would allow students to learn coding languages such as Python, C++ and others in regional languages including Tamil, Telugu and Hindi.

The startup, GUVI, on Tuesday conducted community conferences in IIT-M to provide opportunities for students from Tier-2 and Tier-3 cities.

"Recruiters are looking for students with programming and problem solving skills. Our online platform will give students a hands-on experience in data structure algorithms and web technologies," said S P Balamurugan, co-founder and CEO, GUVI.

Top recruiters including Juspay, GoFrugal, Chargebee, Scaptic, Ionix, Linarc and Infinity Software Solutions participated in the conference and offered jobs to students.

More than 30,000 engineering students have enrolled with GUVI's online courses. The platform offers 45 courses and will add 34 more soon.

### **ISRO and IIT Madras can bring to life Sivakasi's dying firecracker industry**

<https://theprint.in/opinion/isro-and-iit-madras-can-bring-to-life-sivakasis-dying-firecracker-industry/216016/>

**Defence ministry too wants to indigenise ammunition production, and Tamil Nadu govt can use this to turn Sivakasi into a propellant manufacturing hub.**



Workers in a fireworks factory in Sivakasi

The toxic chemicals whose manufacturing brought the environmental spotlight on Tamil Nadu's Sivakasi may just help transform the city's fortunes after all — with some help from the IIT Madras, the Indian Space Research Organisation and the Tamil Nadu government.

Both the ISRO and the Ministry of Defence (MoD) will need huge quantities of propellants and explosives soon — the ISRO for the launch of its satellites and the MoD as part of its efforts to indigenise ammunition production.

And Tamil Nadu's Sivakasi, whose thriving firecracker economy is reeling under shut factories and lakhs of workers without jobs, has what one would call the "nature's gift".

Sivakasi has a dry climate and low rainfall all year round, making it ideal for the manufacturing of explosives. This explains the offset printing industry in Sivakasi, with its more than 800 factories producing 90 per cent of India's fireworks, 80 per cent of all safety matches, and providing the country 60 per cent of the offset printing services.

Sivakasi is also very cost competitive since its dryness minimises air-conditioning requirements. Over the past century, the Pyro Town has developed expertise in handling raw material used in explosives and adopted technologies that are relevant to firecrackers. Significantly, its expertise in making aluminium metal powders — a vital ingredient for explosives and the forte of Sivakasi — has been enhanced with the latest technology from IIT Madras, with some fireworks units having already started supplying material for defence purposes. Industrial units in Tamil Nadu also manufacture other major ingredients for propellant and explosives — ammonium perchlorate and Hydroxyl-terminated polybutadiene (binding agent).

The IIT Madras is taking the lead in trying to completely transform Sivakasi from a firecracker hub to an explosives and propellant industrial base. The institute's faculties started by first bringing to the notice of authorities handling the Tamil Nadu Defence Industrial Corridor (TANDICO) the fact

that Tamil Nadu does not manufacture composite solid propellants despite having all industry which produces its constituent ingredients.

The IIT Madras is the only educational institute that carries out cutting-edge research in the field of explosives and propellants. It also advises the ISRO, the DRDO, the OFB and a few private players. It will have to establish a dedicated research centre to enhance indigenisation and open export market of explosives.

All this makes the IIT Madras the ideal knowledge partner in this transformational exercise. And the institute's role will only increase in the near future, with the ISRO going commercial with the launch of international satellites. Indian government's Department of Space notes that as of August 2018, the ISRO's Polar Satellite Launch vehicle (PSLV) has successfully launched 239 foreign satellites from 29 countries. There are plans to expand this capacity for international and domestic purposes.

The expected number of launches annually are 20-30 SSLVs (Small Satellite Launch Vehicle), 10 PSLVs and 5 GSLVs (Geo-Synchronous Satellite Launch Vehicle). Each of these launch vehicles will need about 100-120 tons, 220 tons and 425 tons of composite propellant, respectively. Annual future requirement of propellants will be more than the ISRO's integral capacity. It is looking for private partners to help with the manufacturing of composite propellants, which will cost around Rs 5,000-8,000 per kg. This has been assessed by the IIT Madras.

The scale is huge. If the ISRO must carry out these launches, it will need another launching site eventually. For that it will have to scout for a site further south on the Tamil Nadu coast for two main reasons — the nearer the site is to the equator the better it is for the launch, and the north of Sriharikota is crowded.

Sivakasi's business fortunes can also take heart in the MoD's efforts to indigenise ammunition production. Even if its efforts are incrementally successful, the requirement of raw material for propellants and explosives for research purposes by the Defence Research and Development Organisation (DRDO) and the production of service ammunition will be beyond the capacities of Ordnance Factor Board (OFB) and other private players. While the scale of ISRO is huge and immediate, the range of MoD's requirement is vast. In time, the requirement of the MoD will match that of the ISRO.

This is where the Tamil Nadu government will have to come in. The government will in all probability get involved with the establishment of the new launch site, which will likely be proximal to Sivakasi and help the town derive huge logistic cost benefits.

The launch site needs to drive the conversion of Sivakasi into an explosive and propellant manufacturing hub as part of TANDICO. It will involve infrastructural establishment, financial enablement, assistance in licensing and training. The Tamil Nadu government must see beyond and look at international markets for exports as well. It must also start talking to the DRDO and the OFB to explore feasibility of sourcing items from Sivakasi.

All in all, there is a win-win situation emerging in the conversion of Sivakasi to a propellant manufacturing hub. It is a low hanging fruit. If Sivakasi is not transformed, we might have to turn to import. That will be stupid to say the least.

### **Academics & researchers from IITs, DU, JNU urge Indians to vote against ‘those who lynch’**

<https://theprint.in/politics/academics-researchers-from-iits-du-jnu-urge-indians-to-vote-against-those-who-lynch/216465/>

The academics, also from TIFR and Ambedkar University, have written a letter, requesting people to not endorse politics that creates fear.



Over 150 academics and researchers have appealed to Indians to vote “wisely” and against those who lynch people, and discriminate on the basis of religion, caste, gender, language or region.

The group, in a letter issued Tuesday, appealed to the citizens “to vote against inequality, intimidation, discrimination, and unreason”.

The academics include those from Indian Institutes of Technology (IITs), Delhi University (DU), Jawaharlal Nehru University (JNU), Tata Institute of Fundamental Research (TIFR) and Ambedkar University, among others. The letter has been signed by DU professors Abha Dev Habib, Nandita Narain, IIT-Bombay professor Abhijit Majumder and Central Drug Research Institute researcher Saman Habib, among others.

“The upcoming election is a crucial one. It asks for a re-affirmation of the most fundamental guarantees our Constitution gives us — equal rights to faith or lack thereof, culture, language, association, personal liberty and freedom of expression. These rights, even as they accrue to each of us individually, can only exist if they accrue to all Indian citizens — without partiality or discrimination,” the letter stated.

“To defend these rights, we must reject those who lynch or assault people, those who discriminate against people because of religion, caste, gender, language or region,” the letter added.

“Again, we must reject those who encourage such practices. We cannot endorse a politics that divides us, creates fears, and marginalises a large fraction of our society — women, Dalits, adivasis, religious minorities, persons with disabilities or the poor. Diversity is our democracy’s greatest strength; discrimination and non-inclusivity strike at its very foundation.”

### **‘Vote wisely’**

The academics further wrote they do not want to give the youth a future where scientists, activists and rationalists are hounded, harassed, intimidated, censored, jailed, or worse, murdered.

“We appeal to all citizens to vote wisely, weighing arguments and evidence critically. We appeal to all citizens to remember our constitutional commitment to scientific temper. We appeal to you to vote against inequality, intimidation, discrimination, and unreason,” the letter stated.

Last week, over 100 filmmakers, most of who work either independently or on documentary movies, had released a statement appealing people to not vote for the BJP.

## **April 2**

### **JEE Advanced 2019: Notification released on jeeadv.ac.in, 2.45 lakh to be shortlisted based on JEE Main**

<https://www.timesnownews.com/education/article/jee-advanced-2019-notification-released-on-jeeadv-ac-in-2-45-lakh-to-be-shortlisted-based-on-jee-main/392995>

IIT Roorkee has released the information bulletin for JEE Advanced 2019 on jeeadv.ac.in. This year, 2, 45,000 students would be shortlisted for JEE Advanced 2019 examination.



2.45 lakh students to be shortlisted for JEE Advanced 2019

Indian Institute of Technology, IIT Roorkee has released the official notification for JEE Advanced 2019. The information bulletin or brochure is now available on the official website jeeadv.ac.in. As many as 2.45 lakh or 2, 45, 000 candidates would be shortlisted to appear for JEE Advanced 2019 based on their JEE Main 2019 Result. Check other important instructions, break up of seats, etc., below.



Please note that 2,45,000 is not an absolute number and may vary in case of 'tied' ranks/ scores in the category. This would in turn be divided for various categories. This year, a 10% EWS category would also be introduced. The category wise JEE Main 2019 Rank (Top Candidates) break up is tabulated below.

Category	Number of Top Candidates
Open	1,08,229
Open PwD	5,696
General (EWS)	9,310
General (EWS - PwD)	490
OBC - Non Creamy Layer	62,843
OBC - Non Creamy Layer - PwD	3,307
Scheduled Caste	34,913
Scheduled Caste - PwD	1,837
Scheduled Tribes	17,456
Scheduled Tribes - PwD	919

Apart from qualifying JEE Main 2019 examination, candidates must also qualify in the other eligibility criteria as laid out. These are summarised below.

There is an upper age limit of 25 years for JEE Advanced 2019 calculated as on October 1, 2019. 5 year relaxation is given to candidate from SC, ST and PwD candidates.

Candidates can appear for JEE Advanced for a maximum of two consecutive years in a row. If a candidate has appear for JEE Advanced 2017 and JEE Advanced 2018, he/she is not eligible to appear for JEE Advanced 2019.

Candidates must have completed or appeared for their class 12 examination either in 2018 or 2019. The condition further adds that "if the examination Board of Class XII (or equivalent) declares the results for the academic year 2016-17 after June 2017, then the candidates of that board who appeared for their class XII exam in 2017 are also eligible to appear in JEE (Advanced) 2019, provided they meet the other eligibility criteria. In case, the examination Board of Class XII (or equivalent) declared the results for the academic year 2016-17 before June 2017 but the result of a particular candidate was withheld, then the candidate will not be eligible to appear in JEE (Advanced) 2019."

Finally, all those candidates who have been admitted to the IITs previously are not eligible. This includes those candidates who may or may not have continued in the program. Provision to this rule however allows all such candidates who have been admitted to a preparatory course in any of the IITs for the first time in 2018 to appear for JEE Advanced 2019.

Apart from these, all the candidate who paid seat acceptance fee in 2018 but did not report or withdrew their set allotment, are eligible to appear for JEE Advanced 2019. All are advised to go through the [official notification as on jeeadv.ac.in](http://jeeadv.ac.in) given here.

The online application forms would commence from May 3, 2019 and would close on May 9, 2019. The eligibility of the candidates based on their JEE Main 2019 rank would be available when the JEE Main 2019 result is declared. Due to General Elections 2019, the JEE Advanced 2019 exam date has been shifted. The examination would be conducted across India on May 27, 2019.

## **IS EDUCATION A DISCRIMINATING FACTOR TODAY?**

<http://www.theshillongtimes.com/2019/04/02/is-education-a-discriminating-factor-today/>

In India we speak of a variety of discriminations like social discrimination in the form of caste system, racial discrimination, economic discrimination, religious discrimination, political discrimination etc. In the last few decades a new type of discrimination has emerged and that is educational discrimination. In the past, education was of an equal level in most parts of the country. Any person who completed his or her graduation or post-graduation from any university, would easily be absorbed in the employment market. There was a high degree of egalitarianism in education and so discrimination on this ground was unheard of. The phenomenon of expensive private schools and colleges was still absent. Today however, we are witnessing a great disparity in the level of education all over the country. This is seen at different levels of education:

At the primary education level, we have English medium schools which cater to the elite class and vernacular medium schools which cater to the poorer classes. Most of the former type of schools are located in urban areas while the latter are mostly found in rural areas. The same is with Secondary and Higher Secondary levels. There are those meant for the elites and others meant for the poorer classes. So what is actually happening is that discrimination sets in right from the start of a child's educational pursuit. It is evident that elite schools would have the best of infrastructure and the best of teachers. The reason is that the school fees are exorbitant and so they can afford to provide such high standards. The poor schools on the other hand usually do not even have the basic infrastructure and much less qualified teachers since the fees are comparatively low. Such schools are more prevalent in rural areas where the population is poor and backward.

When it comes to higher education, the poor students are always left behind in the race since they have no financial back up. As of today, higher and professional education is meant only for the rich people. Who are those able to afford to procure admission in IIT, IIM, Medical and Engineering Institutes? They are the well to do students whose parents can afford to spend lakhs of rupees. It is a fact that such professional and specialized education is reserved for the rich classes. The poor are meant to content themselves with simple graduation from ordinary colleges. In most cases they are doomed to be either unemployed or doing some small clerical jobs or become daily labourers. Who are those who climb up the social ladder and become bureaucrats and powerful persons who are at the helm of state affairs? They are those born with the silver spoon in their mouths, whose families can afford to pay for their higher education. There is a lot of injustice in our present educational system which if not addressed immediately will worsen discrimination in our country. The maladies are easily traceable in our present educational system:

First of all, education has become extremely expensive and so the majority of the people who are poor cannot afford it. Educational costs rise higher as a person goes into higher education. Moreover, private institutions who provide quality education demand higher fees from students. This naturally excludes the poor from accessing such facilities.

Secondly, the shamble in which government educational institutions are, brings down the quality of education provided there. The poorer classes who can only afford to study in such institutions get only a third-class type of education. It is not unusual to see that in rural areas government schools do not even function normally. Lack of basic infrastructure and adequate qualified teachers spell doom for these schools.

Thirdly, the present educational system in India is a cut-throat competitive system where marks decide the fate of a student. Cut-off marks for admission in all colleges, universities and professional institutes are monstrously high that they automatically exclude the poorer classes. Students hailing from poor families who study in third-rated institutions cannot compete with rich students from elite educational institutions. Therefore as long as admission is based on marks system, only the privileged students will get the opportunity for higher education.

The only solution perhaps is through levelling of education in the whole country as done in the west. Some sort of egalitarianism and uniformity must be brought into our educational system. This can be done if the government gives priority to education as a national investment. In last year's central government budget education gets only Rs. 85,000 crores while Defence gets 2.95 lakh crores. This indicates how little importance education is given by the nation in general. If the government were to invest more in education, it could provide equal financial assistance to all educational institutions and it could afford better scholarships for students from poorer families. This would bring down the educational fees and give more access to higher education for the economically poorer students. The government must understand that investment in human resource is of primary concern; and what is more valuable and more effective for nation building than educating its citizens? The present system in our education is a malicious method 2/3 of perpetuating domination of the higher castes over the low castes. George H. W. Bush has rightly observed that "education is the key to opportunity. It is a ticket out of poverty." I hope our leaders and our governments understand this and revamp our educational system so as to make all levels of education accessible to the poorest of the poor. Then only can the massive population of poor Indians get out of their age-old ignorance and misery.

### **Average package at IIT-B mgmt school Rs 20 lakh**

<https://milbankmonitor.com/average-package-at-iit-b-mgmt-school-rs-20-lakh/02/04/2019/>

The average at the IIT-Bombay management school's final placement has exceeded Rs 20 lakh per annum for the 2019 batch. Last year, the average pay at Shailesh J Mehta School of Management was Rs 19 lakh. The highest salary, though, has remained unchanged at Rs 32.4 lakh.

### **IIT Madras students develop prototype Hyperloop pod**

<https://urbantransportnews.com/iit-madras-students-develop-prototype-hyperloop-pod/>

***The prototype pod developed by the IIT-Madras students is likely to achieve 400 to 450 km per hour during the finals at Los Angeles in the US.***



Hyperloop Pod

A student group of IIT Madras has successfully developed a prototype Hyperloop pod that would take just 25 minutes to travel from Chennai to Bangalore. Avishkar Hyperloop is the only Indian team to enter into the final of International Hyperloop Pod Competition organized by Elon Musk's Space X.

Hyperloop is being considered as the fifth mode of transportation that can move people and freight quickly. Under this new technology, passengers or cargos are loaded into the Hyperloop pod and accelerated gradually using electric propulsion through a low-pressure (vacuum) tube.

According to the sources, the prototype pod developed by the IIT-Madras students is likely to achieve 400 to 450 km per hour during the finals at Los Angeles in the US. There are 1,600 teams participated in the first round of the competition. After several rounds, only 22 teams are shortlisted for the final round.

Pranit Mehta, Head of marketing and sponsorship programme, Avishkar Hyperloop said that they are the only Indian team to qualify for the finals. Rest of the teams are from Europe and US. They need to build a fully functional prototype vehicle. The 22 teams that would take part in finals need to take their prototype pods and run it through the vacuum tube at the Space X's headquarters in California.

The travel in hyperloop pod can dramatically reduce the travel time between the cities.

Suyash Singh, a PG student and head of Avishkar Hyperloop team said, "We are working on technologies like Magnetic Levitation and Linear Induction Motors, which can help reduce inter-city travel times drastically. For instance, Chennai – Bangalore travel time would just take 25 minutes via

hyperloop instead of five hours through a train. It would be convenient, affordable and environmentally friendly.”

He said that funding is one of the major issue faced by the student team during the design and development of the pod. “Our design is very safe – other teams focused on speed of the vehicle whereas we gave equal focus to safety,” said Pranit Mehta.

For the competition, the students aim to achieve speeds over 400 to 450 km per hour in a distance of approximately 1.5 km.

## **Delhi’s summer action plan to concentrate on bad air hotspots in Nation Capital**

<https://www.dekhnews.com/delhis-summer-action-plan-to-concentrate-on-bad-air-hotspots-in-nation-capital/>

Delhi’s summer action plan to concentrate on bad air hotspots in Nation Capital: The winter is now finally over and Delhi’s pollution levels have also dropped. In the months of winter the Air Quality Index (AQI) was flying mainly in the “moderate” zone, as opposite to “very poor” and “severe”, this is generally the time when authorities in the Capital has failed to recall about pollution, only to be offensively awakened when a unexpected spike around Diwali drops Delhi into an additional public health emergency.

This year, for the first time, the Capital’s pollution observing and regulatory agencies are arranging a hotspot-based action strategy to tackle bad air even for the duration of summer months. According to them this will help them to make improved air quality for next winter.

As per to the senior government officials, the Delhi Pollution Control Committee (DPCC) has acknowledged at least 12 areas where the pollution levels are high than the permissible limits such as Anand Vihar, Okhla Phase 2, Mundka, Dwarka Sector 8, Bawana, RK Puram, Rohini Sector 16, Narela, Jahangirpuri, Vivek Vihar, Wazirpur and Ashok Vihar. The DPCC found that these areas have the pollution levels have been set up to keep on at least two to three times more than the permissible limits on utmost days of the year, comprising in the summer.

The body, which is the city’s pollution control organization under the Delhi government, has made the decision that the bi-weekly action strategies, which will be regularly give in to by Indian Institute of Technology-Delhi assistants from April and is going to be obligatory in these hotspots to recover air quality all through the summer.

In addition, measures recorded under the Graded Response Action Plan (GRAP) for “moderate” and “poor” AQI levels will also be imposed by the municipal bodies and the revenue division, said the officials named above.

A senior official from the Delhi environment department said, “Even though some GRAP measures are to be implemented throughout the year, the actions become more visible during the winter when pollution peaks. But this time, we are developing a hotspot-based approach to fight pollution levels during the summer too.”

Even in the months of summer, Delhi barely acquires any “good” days when the analysis on the 0 to 500 AQI index is lower than 50.

A CPCB official said, “We plan to enforce the bi-weekly action plans, which are being developed by IIT Delhi in these hotspots starting this summer. For this, nodal officers in civic bodies and revenue department would be appointed who would implement the plans.”

CPCB teams, which have been failing violations all through the winter, have found that few activities such as construction undertakings, garbage burning and road dust are a number of of the major contaminators throughout the summer, separately from vehicular and industrial pollution. These contributions will be measured when the plans are being organised.

Mukhesh Khare who is the professor of civil engineering department from IIT-Delhi is making the bi-weekly plans said, “High-resolution data gathered by scientists from the ministry of earth sciences on major sources of pollution such as industries, vehicles and landfill fires are being used to prepare the bi-weekly plans. But we have requested for more comprehensive data on at least two sources — construction dust and road dust.”

D Saha, former head of the CPCB’s air quality laboratory said, “Delhi’s pollution depends on ground-level activities and meteorology. If we can control the pollution arising out of our ground level activities then we can further improve the air quality. But this has to be a round-the-year activity and not just a winter activity.”

## **April 1**

### **Scientists from IIT Gandhinagar develop a tool to identify dementia through eye movements**

<https://www.indiatoday.in/education-today/news/story/scientists-from-iit-gandhinagar-develop-a-tool-to-identify-dementia-through-eye-movements-1491236-2019-04-01>

***By the time symptoms of dementia are detected, it is too late -- Alzheimer's disease kicks in and it can't be managed. But if dementia is caught early, we can delay the progression of Alzheimer's.***



Scientists from IIT Gn develops a tool to identify dementia through eye movements

In a breakthrough study, scientists at IIT Gandhinagar have developed a technology that can non-invasively diagnose dementia by tracking a person's eye movements, much before the symptoms appear.

With a significant rise in ageing population, neurodegenerative disorders are becoming a serious health issue. While dementia can't be cured, its progression can be delayed if diagnosed early.

"By the time symptoms of dementia are detected, it is too late -- Alzheimer's disease kicks in and it can't be managed. But if dementia is caught early, we can delay the progression of Alzheimer's," said Uttama Lahiri, Associate Professor of Electrical Engineering, at Indian Institute of Technology (IIT) Gandhinagar.

Her team, which included Ritika Jain and Valay Patel, developed the 'MindEye' project that can track a person's eye movement, quantifying gaze in terms of reaction time and correct fixations, in response to visual stimuli presented on a computer monitor.

**"We present a stimulus -- dots appearing at certain portions of the screen at certain angles. People with dementia often have issues with following the dot or fixing their gaze," Lahiri told PTI.**

Researchers can then map the eye movements in response to the stimulus. They can identify subtle patterns that predict whether a person suffers from mild cognitive impairment.

The preliminary results of the experimental study with 10 healthy participants were promising, Lahiri said.

"We have handed the technology over to the industry and a larger clinical trial is underway in Kolkata and Gujarat," Lahiri said. This will completely change how dementia is seen as in the world.

**About 1,600 people have been screened already, she added.**

Researchers used standard tests -- long questionnaires that a patient answers with the help of a psychiatrist -- to validate their results.

The results were presented this month at the Faculty of Old Age Psychiatry Annual Conference held in the UK.

Existing tests methods to diagnose dementia in patients have several shortcomings. During their research, Lahiri found that uneducated people in old age homes have difficulty answering the questionnaires, making it harder to give a correct diagnosis.

"That is where our system can take over and diagnose dementia. There is no screening tool yet that can detect dementia in such objective terms," said Lahiri.

#### **About IIT Gandhinagar**

The Indian Institute of Technology Gandhinagar strives to offer the best undergraduate and graduate education in India with unmatched innovations in the curriculum. The institute promotes critical thinking and an appreciation of the interdisciplinary character of knowledge, with an emphasis on the liberal arts, project-oriented learning, compulsory courses in design and the life sciences, diversity and globalization.

**Environment-friendly initiative! IIT-Madras converted petroleum waste product into benzoic acid**

<https://www.financialexpress.com/lifestyle/environment-friendly-initiative-iit-madras-converted-petroleum-waste-product-into-benzoic-acid/1534122/>

**The IIT-Madras is also renowned for having a faculty of global eminence, a vibrant student ecosystem that thrives on research and innovation, as well as excellent technical aid and supporting staff, besides the effective administration of the institution across all departments.**



The most cited benefit is that benzoic acid inhibits the growth of bacteria and yeast.

A significant milestone by a two-member team at IIT-Madras has converted petroleum waste product toluene successfully into benzoic acid, which is a useful product. The team was led by G.Sekar from the chemical department of the institute. So, how did the scientists at IIT-Madras manage to convert toluene into benzoic acid? Let's find out. Firstly, toluene was converted using selective oxidation in the presence of a catalyst known as Pt-BNP. Generally, organic reactions are carried out by using certain organic solvents. This makes it both expensive and generates toxic waste. In order to overcome this problem, scientists opted to use water as a solvent, thereby making the process environment-friendly as well.

In addition to the above-mentioned ingredients, a green oxidant was also used to enable the conversion of toluene.

As most of you already know, benzoic acid is useful not only a food preservative but also as a medicine for bacterial and fungal infections. As a food additive, benzoic acid can be used to preserve foods such as chewing gums, ice creams, jellies, pickles, fruit juices, soft drinks, pickles, barbecue sauces, salad dressings and so on.

In fact, if you take a closer look at the labels of most processed foods, you can spot that benzoic acid is included in it artificially. The most cited benefit is that benzoic acid inhibits the growth of bacteria and yeast. Known as one of the foremost institutes of national importance, Indian Institute of Technology Madras (IIT-Madras) is located in Chennai. In consonance with its mission statement, the renowned institution refers to itself as an academic institution that thrives in a dynamic equilibrium with social, ecological as well as



economic environment striving continuously for demonstrating excellence in the field of research, education and technological service to the nation.

The institute has made significant strides in the field of teaching, research as well as industrial consultancy in the field of higher technical education. The IIT-Madras is also renowned for having a faculty of global eminence, a vibrant student ecosystem that thrives on research and innovation, as well as excellent technical aid and supporting staff, besides the effective administration of the institution across all departments.

### **Public bicycle sharing system devised by researchers at IIT Kharagpur**

<https://timesofindia.indiatimes.com/home/education/news/public-bicycle-sharing-system-devised-by-researchers-at-iit-kharagpur/articleshow/68664598.cms>

A team of researchers at the department of Architecture and Regional Planning of Indian Institute of Technology Kharagpur has come up with a dock-less public bicycle sharing system or PBS that could help even locals take on the might of multinational ride-sharing companies which run their own PBS. The PBS devised at IIT Kharagpur uses a Bluetooth and GPS enabled electronic lock which could be fitted to a cycle. Another lock version using GPRS is also being tested. The booking and payment interfaces are accessed through the users' mobile phone. A similar interface has been developed for operators to set up a customized PBS system, including parking stations, rate charts for usage etc to run its day to day operation. The software has also been developed for an effective redistribution system of cycles to reduce operating costs and to determine the appropriate number of bicycles for a certain service area.

The real difference of this PBS system from that run by the multinationals lies in the fact that the latter import the technology of the bicycle smart lock from other companies and then develops the access control software for the ride-sharing of the cycles. The PBS developed at IIT Kharagpur adheres to the 'Smart City' and 'Make In India' initiative and integrates the entire system with an IoT smart lock technology and other hardware which has been devised in-house.

The researchers have also developed the software for PBS operations which is extremely expensive to procure. They will give the technology free to small operators and thus create an enormous potential for self-employment. The servers would be hosted in IIT campus thus relieving the operators of the burden to maintain costly hardware by them self. This will ensure widespread use of PBS and huge environmental and health benefits.

The team started the hardware development sometime around September 2017. The prototype of the locks developed by the team has gone through several versions. A Bluetooth enabled bicycle lock with GPS and alarm systems have been currently developed which also incorporates other sensor modules for improving security and theft detection.

Debapratim Pandit of the Architecture and Regional Planning department, who is leading the project, says that the real challenge was developing the operations part. They have come up trumps though. Pandit said, "Anyone can start the system in a couple of hours with 25-30 bikes. A geo-

fencing area has to be created to start operation. We have an administrative app for operators to create all this.”

The major issue with PBS is to ensure the availability of bicycles and parking space/bicycle dock at the bicycle user’s point of demand which is limited by the location of parking stations and the number of bicycles available at each location. Pandit added, “There had to be software for redistribution– something none of the multinational or other companies had tried to develop.” So, the team developed the software, including the algorithms for an effective redistribution system appropriate for the local context to reduce operations cost.

Pandit also pointed out, “We are not going to charge money for any of the technology developed. The servers will be stationed inside IIT Kharagpur and operators can be easily trained to operate the system using just mobile phones. Although the production of the lock has not been finalized, we can partner with few companies to produce the locks using our designs and dies under license.”

### **IIT KGP to develop training programs for Gopichand Academy focussing on players happiness**

<https://sportstar.thehindu.com/badminton/pullela-gopichand-academy-signs-mou-iit-kharagpur/article26703578.ece>

**Under the collaboration, IIT-KGP will also set up a sports academy in collaboration with Gopichand.**



India's chief national coach Pullela Gopichand at the Gopichand Academy. - V.V. SUBRAHMANYAM

Country’s premier technology institute, IIT Kharagpur has signed a Memorandum of Understanding (MoU) with the Pullela Gopichand Badminton Academy to develop research and training module for the trainees of the Hyderabad-based sports facility.

“The thrust areas of the collaboration include developing training programs by IIT Kharagpur focusing on happiness and well being for enhancing the quality of performance and resilience,” a statement from IIT-KGP said.

A delegation from IIT Kharagpur led by Director Prof P.P. Chakrabarti met Gopichand in New Delhi on March 30 in this regard.

“Players and coaches from PGBA will benefit from these programs. Further the coaches will also be trained on how to use that knowledge while training players.”

Under the collaboration, IIT-KGP will also set up a sports academy in collaboration with Gopichand.

“I am also very happy to know that a sports academy is coming up at IIT Kharagpur and looking forward to contributing to its development,” Gopichand said in the statement.

Prof. Chakrabarti added: “The academy would promote collaborative research related to happiness in sports in general and badminton in particular, and science and technology in sports training.

“The scope would also include joint monitoring and use of materials used in general and badminton in particular by IIT Kharagpur and Pullela Gopichand Badminton Academy.”

The collaboration is spearheaded by S.S. Rekhi, US-based entrepreneur and alumnus of IIT Kharagpur, who funded the Rekhi Centre for Science of Happiness at IIT Kharagpur and his company R Systems is the sponsor of Gopichand Badminton Academy.

### **AICTE modifies promotion rules under Career Advancement**

<https://timesofindia.indiatimes.com/home/education/news/aicte-modifies-promotion-rules-under-career-advancement/articleshow/68667021.cms>

One of the pre-requisites for the promotion of Engineering teachers requires them to attend a three-week long training session. However, after receiving several complaints from teachers about their inability to attend these sessions in the midst of taking regular classes, AICTE has decided to bring changes in the mandatory training programmes required for the Career Advancement Scheme (CAS).

Packed schedules of the teachers restricted them from attending the training sessions that were usually stretched upto three weeks. Most teachers found it difficult to take out time for three weeks training at a stretch. After the implementation of the new rules, they can participate in multiple training sessions lasting only for a week. “Earlier, the teachers were bound to attend 2-3 weeks of a mandatory training programme. Now, the AICTE will count multiple one-week duration courses conducted by government institutes, as equivalent to a two-week duration course,” AICTE chairman Anil Sahasrabudhe told Education Times.

In 2012, AICTE released a notification for career advancement of teachers and other academic staff in technical colleges under sixth Central Pay Commission (CPC) that mandated minimum academic performance and training programmes of a 2-3 week for promotion to a higher grade at any government organisation such as UGC, IISc, NRC, ARPIT, etc.

“Nowadays, the organising institutes, as well as the teachers, do not have sufficient time to attend long training sessions. Hence, this will also help teachers as well as the institutes that conduct the courses to fully focus on the training sessions,” said Sahasrabudhe.

AICTE is also planning to introduce 360-degree evaluation process for the teachers at engineering and other technical institutes with compulsory three-week industry internship.

“Under the new plan, student’s feedback, the response from the colleagues and the department head will be included in the teachers’ assessment. The teachers will also have to undergo a three-week mandatory industrial internship in order to get promoted,” said Sahasrabudhe.

## **MHRD ARPIT Scheme: only 0.5% teachers appear for online exam on 30 March**

<https://www.jagranjosh.com/news/mhrd-arpit-scheme-few-teachers-appear-for-online-exam-148414>



MHRD ARPIT Scheme: The Ministry of Human Resources Development (MHRD) has launched ARPIT scheme for professional development of teachers of the country. The aim of the ARPIT scheme is to ensure the professional development of the teachers in the higher education institutes. In 2018, only 0.5% of the teachers register themselves for the scheme. The first ever exam was conducted on 30 March 2019.

The Annual Refresher Programme in Teaching (ARPIT) scheme was launched by the Ministry of Human Resources Development (MHRD) in 2018. The scheme aims at the development of the faculties of the higher education institutes so that the standard of the professional knowledge of these teachers can be uplifted. In 2018, only 5000 teachers register for the exam.

As per the statement of one of the officials of MHRD, “In some disciplines, there were more teachers in the exam, while in some, there were as many as 10 teachers. This is because of the lack of awareness of the faculty members.” He further said that soon things will change for better.

There has been some challenge in the teaching sector due to the change in technology. It is therefore necessary for the teachers to get themselves updated so that they can be technically ready. The standard of teaching needs to be lifted to a certain extent. To meet the task of professional development, there has been setting up of National Resource Centres (NRC) which will prepare the course material and other related stuffs.

The exam has been conducted in the online mode and it was conducted by the National Testing Agency (NTA). There were 100 questions in which the level of difficulty of the questions were

moderate to difficult. Soon, there will be more enrolment in the scheme of professional development.

**March 30**

### **Lights should be at sides of Yamuna Expressway, not on verge, say experts**

<https://timesofindia.indiatimes.com/city/noida/lights-should-be-at-sides-of-yamuna-expressway-not-on-verge-say-experts/articleshow/68638921.cms>



IIT-Delhi, which has completed its audit of the 165km long Yamuna Expressway but is yet to submit a report, is of the view that lights currently installed on the central verge should be shifted to the sides. It is also believed to have suggested that cameras with better frequency need to be installed for detecting speeding vehicles.

Though chief minister Yogi Adityanath had asked YEIDA to get the IIT report by December 31, in the wake of recent fatal accidents on the stretch, the institute is yet to submit it. Over three months late, the audit report will only be submitted after a detailed presentation before YEIDA officials in the first week of April, sources said.

The audit followed a recommendation by a Supreme Court-appointed committee on road safety.

The expressway earlier had audits conducted on it by RITES — the Centre’s engineering consultancy — and the Central Road Research Institute. However, none of the audits was done on a kilometre to kilometre basis and covered only a part of the expressway. While the auditors from IIT have already inspected the stretch — the last in February this year — the report will play a crucial role in deciding the measures to be taken to fix structural lapses on the highway.

“There are inherent structural lapses which need to be corrected and the IIT has made certain suggestions regarding them. They are of the opinion that cameras with higher resolution need to be installed so that number plates can be detected better. Further, they are of the view that the streetlights that we were planning to increase on the central verge should be installed along the

sides rather than on the median,” YEIDA CEO Arunvir Singh said.

The suggestion for installation of lights had come after the chief minister had raked up the issue last year.

Interestingly, while the Expressway has not even achieved 40% of its projected vehicle density, officials admit that speeding is a factor that needed to be addressed.

A Jaypee spokesperson said while the projected volume for the Yamuna Expressway for 2021 was between 60,000-61,000 vehicles, it is between 25,000 and 30,000 as of now. But even before the volume rises, the changes need to be put in place, officials feel.

“We have already made payments to IIT-Delhi for the Yamuna Expressway audit. They are likely to submit the report in the beginning of April,” the spokesperson said.

YEIDA officials admit the delay was apparent. “We are waiting for the report. The cause of delay is not clear. IIT has said it will hand over the report to us after a detailed presentation,” the YEIDA CEO said.

YEIDA, meanwhile, has initiated an inquiry into Friday’s accident. “The inquiry will be conducted by officer on special duty and will look into structural lapses, response time, human error, etc,” Singh said. He said an IIT professor in-charge of the audit was in China and would be back soon to present the report.

### **IIT Madras converts petroleum waste toluene into useful product**

<https://www.thehindu.com/sci-tech/science/iit-madras-converts-petroleum-waste-toluene-into-useful-product/article26688417.ece>



**A green oxidant and water instead of organic acid were used for converting toluene into benzoic acid**

Using platinum nanocatalyst, a two-member team at the Indian Institute of Technology (IIT) Madras has successfully converted petroleum waste-product toluene into benzoic acid. Benzoic acid is used as a food preservative (E210) and medicine for fungal/bacterial infection. Toluene is converted into benzoic acid through selective and controlled oxidation in the presence of a catalyst — binaphthyl-stabilised platinum nanoparticles (Pt-BNP).

### **Green oxidant**

Generally, organic reactions are carried out using organic solvents, which makes it expensive and also generates toxic waste. So in a departure from current practice, the team led by G. Sekar from the institute's Department of Chemistry has used water as solvent to make it environment-friendly. Also, a green oxidant (70% aqueous tert-butyl hydroperoxide or TBHP) is used for converting toluene into benzoic acid.

“When toluene is oxidised, it gives four products. But when we use the catalyst that we developed, only benzoic acid is produced. No alcohol, aldehyde or ester is produced,” says Prof. Sekar. The yield of benzoic acid varied from 68-96% depending on whether the toluene used is electron-deficient or electron-rich. The results of the study were published in the journal *Applied Catalysis B: Environmental*.

Central to the work is the novel catalysts that the team developed. Generally, platinum nanoparticles are not stable in nature as they tend to agglomerate and become macroparticles. The catalytic activity is reduced once it becomes macroparticles. The binaphthyl that is bound to platinum nanoparticles acts as a stabiliser and prevents nanoparticle agglomeration.

“Binaphthyl bound to platinum nanoparticles makes the catalyst easy to handle and stable. It is the stability of the catalyst to remain as nanoparticles that allows us to recover it and reuse the catalyst up to five times,” says Prof. Sekar. There was no change in the size of the catalyst even after being reused five times.

Toluene when oxidised gets converted into benzoic acid. Molecular oxygen when used alone does not oxidise toluene and so no benzoic acid is generated. So the researchers used TBHP as an oxidiser. “The catalyst reacts with TBHP to initiate the oxidation reaction where toluene gets converted into benzoic acid through a series of reaction steps,” says Rajib Saha, a PhD student at IIT Madras and co-author of the paper.

### **Economical combination**

When used alone, a large quantity (four parts of TBHP to 1 part of toluene) of TBHP would be required for the conversion, which will not be economically favourable. In order to reduce the amount of TBHP used, the researchers also used molecular oxygen.

“In the presence of molecular oxygen, only two parts of TBHP are needed for the conversion. So molecular oxygen behaves as a co-oxidiser,” says Prof. Sekar. “Molecular oxygen is cheap, so using it along with TBHP helps in reducing the cost.” The use of TBHP along with molecular oxygen also increased the yield of benzoic acid.